

Claims

5

1. A speech analyzing stage for analyzing in the spectral domain a speech signal sampled at one of at least two different system sampling rates, comprising:
 - a first spectral analyzer for analyzing the speech
 - 10 signal up to a first frequency; and
 - a second spectral analyzer for analyzing the speech
 - signal at least above the first frequency.

15

2. The speech analyzing stage according to claim 1, wherein the first frequency is derived from the lowest sampling rate.

20

3. The speech analyzing stage according to claim 1, wherein the second spectral analyzer analyzes the speech signal only above the first frequency.

25

4. The speech analyzing stage according to claim 1, wherein the second spectral analyzer analyzes the speech signal up to a second frequency and further comprising a third spectral analyzer for analyzing the speech signal at least above the second frequency.

30

5. The speech analyzing stage according to claim 4, wherein the third spectral analyzer analyzes the speech signal only above second frequency.

6. The speech analyzing stage according to claim 1, wherein the spectral analyzers are arranged in parallel.

35

7. The speech analyzing stage according to claim 1, wherein at least one of the spectral analyzers is an energy analyzer.

8. The speech analyzing stage according to claim 7,
wherein at least one energy analyzer is configured as a
filterbank.
- 5 9. The speech analyzing stage according to claim 1,
further comprising at least one coding unit for coding
acoustic parameters of the sampled speech signal.
- 10 10. The speech analyzing stage according to claim 9,
further comprising an interface for transmitting the coded
acoustic parameters to a remote network server .
11. A speech analyzing stage in an automatic speech
recognition system, the speech analyzing stage being
15 utilized for analyzing in the spectral domain a speech
signal which is sampled at one of at least two different
system sampling rates and comprising:
 - a first spectral analyzer for analyzing the speech
signal in a lower spectral range up to an upper frequency
20 limit which is derived from the lowest system sampling
rate; and
 - a second spectral analyzer for analyzing the speech
signal, the second spectral analyzer being arranged in
parallel to the first spectral analyzer.
- 25 12. A distributed speech recognition system for recognizing
speech signals sampled at one of at least two different
system sampling rates, the system comprising:
 - a) at least one terminal with
 - 30 - a first spectral analyzer for analyzing the speech
signal up to a first frequency;
 - a second spectral analyzer for analyzing the speech
signal at least above the first frequency;
 - b) a network server with a central speech recognition
35 stage.
13. A data signal to be transmitted from a terminal to a
network server within an automatic speech recognition
system in which speech signals are sampled at two or more

different system sampling rates, the data signal comprising a first data structure relating to the sampling rate at which a speech signal has been sampled and a second data structure containing a codebook index derived from a codebook for a specific combination of one or more acoustic parameters obtained by analyzing the speech signal up to a first frequency and one or more further acoustic parameters obtained by analyzing the speech signal at least above the first frequency.

14. A method of analyzing a speech signal sampled at one of at least two different system sampling rates utilized by an automatic speech recognition system, comprising
 - a first analysis step for analyzing the speech signal up to a first frequency;
 - a second analysis step for analyzing the speech signal at least above the first frequency.
15. The method according to claim 14, wherein in the second analysis step the speech signal is analyzed only above the first frequency.
16. The method according to claim 14, wherein in the second analysis step the speech signal is analyzed up to a second frequency and further comprising a third analysis step for analyzing the speech signal at least above the second frequency.
17. The method according to claim 16, wherein in the third analysis step the speech signal is analyzed only above the second frequency.
18. The method according to claim 14, wherein the analysis steps for the speech signal are performed in parallel.
19. The method according to claim 14, further comprising obtaining acoustic parameters from the analyzed speech signal, coding the acoustic parameters and

transmitting the coded acoustic parameters to a network server.

20. A computer program product comprising program code portions for performing in an automatic speech recognition system the steps of:
- sampling a speech signal at one of at least two different system sampling rates;
 - performing a first analysis step for analyzing the sampled speech signal up to a first frequency; and
 - performing a second analysis step for analyzing the sampled speech signal at least above the first frequency.
21. The computer program product of claim 20, stored on a computer readable recording medium.

6022